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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,228	06/26/2003	Kazukiyo Akashi	03500.017357.	3748
5514	7590	09/22/2004	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO			LEE, PETER	
30 ROCKEFELLER PLAZA			ART UNIT	
NEW YORK, NY 10112			PAPER NUMBER	
			2852	

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/606,228

**Applicant(s)**

AKASHI ET AL.

**Examiner**

Peter Lee

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-8 is/are rejected.
- 7) ☐ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6 june 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/26/2003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 1 is objected to because of the following informalities: It would seem the word "member" found on line 15 of the first claim should read "number". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1, 2, 3, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips (US pn 6456802) in view of Oyama (US pn 5450177). Phillips teaches a toner capacity determination apparatus (ie. toner residual amount detection apparatus) having: a developing device for developing an electrostatic image formed on an image bearing member by a toner (office interprets this to be an inherent component of the prior art when it is mentioned that such an apparatus can be used as a toner cartridge in a laser printer; col. 1 line 8), said developing device being a replaceable toner/developer cartridge (ie. movement relative to an apparatus main body) (col. 3 line 21-23); a sensor for outputting information corresponding to a toner level amount in a reservoir (col. 3 lines 18-20); a processor (Fig. 1 part 36) serves as a judging means for comparing the output of said sensor with a known level of toner (ie. reference value) to thereby judge if the initial capacity of toner was correct (middle of abstract paragraph) (ie. the toner residual amount); wherein the user is warned and prompted to change the toner cartridge

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(col. 6 lines 35-37) (ie. image forming is inhibited) after the predetermined pages of toner capacity has passed (Phillips teaches that his apparatus can predict the toner capacity in terms of number of pages left to print; col. 5 line 65-66) (ie. predetermined member of times of image forming) after the toner low signal is received (col. 5 line 35) (ie. residual amount is judged to be not sufficient). As to claim 2, Phillips further teaches the use of a detachable toner/developer cartridge (ie. developing device) in his patent application (col. 3 lines 21-23). As to claim 3, Phillips further teaches the placement of the toner sensor inside of the toner reservoir (col. 4 lines 58-60) (ie. developing apparatus).

As to claim 1, Phillips does not teach changing the reference value to a smaller value with the judgment that the toner residual amount is not sufficient. Oyama teaches such a practice of changing a reference value (VR seen in col. 6 line 57) to a smaller value with the judgment that the toner residual amount is not sufficient (col. 7 lines 4-8). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include such a practice to a toner residual detection apparatus. One of ordinary skill in the art would have been motivated to implement such a practice as taught by Oyama into the toner capacity apparatus taught by Phillips because the toner concentration can be controlled stably and in harmony with balance of toner of the developer (col. 7 lines 27-28).

As to claim 8, Phillips teaches all of the limitations pertaining to claim 8 as seen above. Phillips does not teach lowering a reference value to prevent toner levels from being erroneously judged to be sufficient. Oyama teaches having a changing means to change the value of VR (col. 6 line 41) (ie. reference value) to a smaller value so as not to consume excessive amounts of toner (col 7 lines 5-8)(ie. so that the toner residual amount may not be erroneously judged to be

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sufficient). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to lower the reference value when toner levels were detected to be low. One of ordinary skill in the art would have been motivated to do this in order to enhance the accurate correction of the reference value and maintain the developing ability to be constant (col. 6 lines 43-45).

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips in view of Oyama, and further in view of Kojima et. al. (US pn 6668141). Phillips and Oyama teach all of the limitations pertaining to claim 3 as seen above, except for having a particular sensor and arrangement. Kojima teaches having such a sensor of plate antenna type (col. 7 lines 60-63)(ie. electrically conductive) in opposed relationship with a developing roller (Fig 2 part 5a)(ie. toner carrying member) provided in said developing device for outputting a signal conforming to the developer remaining amount (col. 8 lines 32-45)(ie. toner residual amount) with the application of an electrical current converted into a voltage (ie. developing bias) to said developing roller. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have such an electrically conductive sensor for detecting the remaining developer being opposed to a developing roll when constructing a residual toner apparatus. One of ordinary skill in the art would have been motivated to do this in order to take advantage of semiconductor electronic memory that have great amounts of storage capacity and small size (col. 9 lines 34-46). The memory would be necessary when comparing the bias levels and calculating proper procedure from the sensors (col. 9 lines 4-9).

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4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips in view of Oyama, and further in view of Sakurai et al. (US pn 6459861). Phillips and Oyama teach all of the limitations pertaining to claim 6 as seen above except the use of a toner residual amount detection apparatus which when the number of times of a sampling output from said sensor indicative of "toner present" becomes equal to or less than the reference value within a predetermined time, said judging means judges that the toner residual amount is not sufficient. Sakurai teaches a means for detecting residual toner amounts (Fig. 1 part 9) that can also detect the frequency of use of the toner cartridge; more specifically the number of sheets printed (ie. number of times of a sampling output within a predetermined time) (col. 5 lines 35-41). It is further taught that the frequency is written into memory (Fig 1 part 60) and a CPU (ie. judging means) (Fig. 1 part 21) is able to calculate when the toner residual amount falls below a reference value M grams (ie. residual amount is not sufficient) (col. 6 lines 7-15). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include such a detection sequence into a residual toner amount detection apparatus as taught by Phillips. One of ordinary skill in the art would have been motivated to do so because the use of look up tables stored inside of ROM taught by Phillips (col. 3 lines 55 – col. 4 line 6) invites the use of writing paper use frequencies into memory taught by Sakurai, which could then easily be used as additional tables in the apparatus taught by Phillips.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips in view of Oyama, and further in view of Katoh (US pn 6687467). Phillips and Oyama teach all of the limitations according to claim 7 as stated earlier. Phillips and Oyama do not teach using a rate of

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integrated time being sensed by a sensor to judge if there is sufficient residual toner. Katoh teaches a printing rate per second (ie. rate of integrated time) being sensed during a step (Fig. 10 step ST2) of a sampling output from a printing rate detector (ie. sensor) indicative of the developer density, which is being compared to a reference value of 2.0 (col. 9 line 54), and when the printing rate falls below this reference value it is determined that the developer density is not sufficient (col. 9 lines 53-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use such a rate of time being detected by a sensor as another method for judging for sufficient toner amounts when building a toner capacity detection apparatus as taught by Phillips. One of ordinary skill in the art would have been motivated to do so in order to achieve efficient image formation without the need for unproductive pre-adjustments that will take up valuable printing time (vol. 10 line 31-33).

***Allowable Subject Matter***

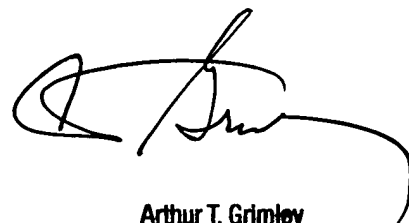
6. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. This claim is allowable in independent form because it discloses a toner residual amount detection apparatus which when in a state in which the toner residual amount is judged to be not sufficient, the output of said sensor exceeds the smaller reference value, said changing means changes it to the original reference value.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Lee whose telephone number is 571-272-2846. The examiner can normally be reached on mon-fri 9:00 am-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on 571-272-2136. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PL 9/17/04

A handwritten signature in black ink, appearing to read 'A. Grimley', with a long, sweeping horizontal line extending to the right.

Arthur T. Grimley  
Supervisory Patent Examiner  
Technology Center 2800